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Artificial Intelligence, Spiritual Intelligence, and Human Flourishing: Toward a Psychological Framework for Meaning-Centered Learning in Digital Environments

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ABSTRACT

Artificial intelligence (AI) is increasingly transforming educational and psychological environments by reshaping how individuals acquire knowledge, interact with information, and develop cognitive and psychosocial capabilities. Although scholarship on AI-supported learning has emphasized personalization, adaptive systems, automation, AI literacy, and predictive analytics, comparatively less attention has been devoted to the deeper question of how AI-mediated learning can contribute to meaning-making, ethical development, human agency, and flourishing. This theoretical article develops a conceptual framework of Meaning-Centered AI Learning and introduces Human Generative Intelligence (HGI) as a multidimensional model of human capability in AI-rich educational environments. Drawing on positive psychology, transformative learning theory, multiple intelligences, emotional and spiritual intelligence, cognitive science, self-determination theory, sociocultural learning theory, AI ethics, and human-centered AI, the article conceptualizes HGI through five interconnected dimensions: cognitive, emotional, relational, ethical, and existential-spiritual intelligence. The framework proposes that AI-supported learning contributes to human flourishing when technological augmentation strengthens rather than substitutes human agency, reflection, relationships, ethical judgment, and purpose. Five theoretical propositions are developed concerning the relationship between AI-supported learning, meaning-centered learning, HGI, and flourishing. The article extends contemporary AI-in-education scholarship by shifting the focus from technological performance toward the development of human capacities required to live meaningfully and responsibly in increasingly intelligent digital environments.

Keywords: Artificial Intelligence; Human Flourishing; Spiritual Intelligence; Transformative Learning; Educational Psychology; Human Generative Intelligence; AI Ethics; Meaning-Centered Learning; Digital Learning Environments

INTRODUCTION

Artificial intelligence has become one of the most consequential technological developments shaping contemporary education, psychology, and human development. AI systems are increasingly embedded in educational platforms, learning management systems, tutoring applications, assessment environments, research practices, and digital communication. Intelligent tutoring systems, adaptive learning technologies, automated feedback, recommender systems, learning analytics, and generative AI applications are changing not only how educational content is delivered but also how learners interact with knowledge itself [1-2]. The emergence of generative AI has accelerated this transformation by making sophisticated forms of language production, explanation, summarization, synthesis, and interaction available to learners on an unprecedented scale [3-4].

The educational significance of these developments is considerable. AI can potentially expand access to knowledge, personalize educational experiences, provide immediate feedback, support learners with diverse needs, and facilitate new forms of interaction between humans and digital systems [5-7]. At the same time, the increasing presence of AI raises questions that cannot be adequately addressed through technological or instrumental perspectives alone. When machines can increasingly perform activities traditionally associated with human cognition, the fundamental educational question becomes more difficult and more important: what forms of intelligence should education cultivate in human beings?

This question requires a reconsideration of the relationship between artificial intelligence and human intelligence. Classical conceptions of intelligence have frequently emphasized reasoning, memory, problem solving, linguistic ability, and other cognitive capacities. Contemporary perspectives, however, have demonstrated that human intelligence is multidimensional and embedded within emotional, social, cultural, adaptive, and meaning-making processes. Gardner's, theory of multiple intelligences

challenged narrow conceptions of intelligence by emphasizing diverse forms of human capability [8]. Goleman's, work on emotional intelligence further demonstrated the importance of emotional awareness and regulation for human functioning [9]. Sternberg's, theory of adaptive intelligence emphasizes the capacity to adapt to, shape, and select environments in ways that promote meaningful goals [10]. These perspectives suggest that intelligence cannot be reduced to computational performance.

The emergence of increasingly sophisticated AI systems makes this distinction particularly significant. AI can process enormous quantities of information, identify patterns, generate text, simulate dialogue, and produce sophisticated outputs. Yet the capacity to generate an output is not equivalent to the capacity to determine what that output means, whether it is ethically appropriate, how it should be integrated into human relationships, or what purposes it should serve. Russell and Norvig, demonstrate the extraordinary breadth of artificial intelligence as a computational field, while Floridi, situates digital technologies within a broader transformation of human reality and the infosphere [11-12]. The question is therefore not simply whether machines can become more intelligent, but how humans should understand and cultivate intelligence when computational systems become increasingly capable.

This distinction becomes especially important in education. Educational systems have historically been designed around the transmission and assessment of knowledge. Students are expected to acquire information, demonstrate comprehension, solve problems, and produce academically acceptable outputs. However, if AI systems can increasingly assist with these activities, an educational system focused primarily on cognitive performance may become progressively less distinctive. The challenge is not to abandon cognition but to deepen it by integrating cognitive capability with reflection, emotion, relationships, ethics, meaning, and purpose.

The literature on AI in education has already begun to recognize the importance of this transition. Holmes, emphasize that AI should be considered in relation to teaching and learning rather than merely as an efficiency-enhancing technology [6]. Zawacki-Richter, identify major applications of AI in higher education while also demonstrating the importance of understanding the pedagogical and human dimensions of technological adoption [2]. Ouyang and Jiao, similarly conceptualize AI in education through different paradigms that move beyond simple automation toward more complex forms of human-AI interaction [7]. These developments create a foundation for asking a further question: what type of human intelligence should AI-supported education seek to develop?

AI literacy represents an important response to this challenge. Long and Magerko, conceptualize AI literacy as a set of competencies that enables individuals to understand, use, evaluate, and engage with artificial intelligence [13]. Ng, similarly demonstrate that AI literacy involves multiple dimensions rather than a single technical skill [14]. AI literacy is therefore essential in contemporary education. Nevertheless, literacy alone may not be sufficient. Knowing how AI works does not necessarily enable individuals to determine why a particular technological output matters, whether it is ethically appropriate, how it affects another person, or how it relates to one's deeper purposes. The development of AI literacy therefore needs to be accompanied by a broader conception of human developmental intelligence.

This issue is closely related to the problem of human agency. Self-determination theory emphasizes autonomy, competence, and relatedness as fundamental psychological needs underlying human motivation and development [15]. If AI systems increasingly make decisions, generate explanations, recommend actions, and produce intellectual outputs on behalf of learners, there is a possibility that technological convenience may gradually displace autonomy and reflective engagement. Human-centered AI therefore requires more than designing systems that are technically effective. It requires designing technological environments that preserve and strengthen human agency [16].

The ethical dimension is equally important. AI systems can reproduce biases, produce misleading information, generate inappropriate recommendations, and create new forms of dependency. Bender, highlight important limitations and risks associated with large-scale language models, while Dwivedi, demonstrate the multidisciplinary implications of generative conversational AI for research, practice, and policy [3-4]. Floridi, similarly propose an ethical framework emphasizing the need to align AI development with principles associated with human wellbeing and a good society [17]. Fiske, in the context of psychological and therapeutic applications, further demonstrate that the use of embodied AI raises questions about responsibility, trust, human interaction, and the nature of psychological care [18].

These concerns indicate that the future of AI-mediated education cannot be addressed adequately by asking only whether AI systems are accurate, efficient, accessible, or intelligent. A broader question must be considered: whether AI-supported educational environments cultivate the capacities that enable human beings to use technological intelligence responsibly and meaningfully.

The present article addresses this problem by proposing the concept of Meaning-Centered AI Learning and developing the theoretical construct of Human Generative Intelligence (HGI). Meaning-Centered AI Learning refers to an educational approach in which AI is intentionally integrated into learning processes to strengthen knowledge, reflection, ethical judgment, emotional awareness, relational competence, and purpose. HGI refers to the human capacity to generate, integrate, interpret, and transform knowledge while maintaining ethical agency, emotional awareness, relational connectedness, adaptive intelligence, and existential purpose.

The concept of HGI builds upon but does not simply reproduce existing theories of intelligence. It draws from multiple intelligences Gardner, emotional intelligence, Goleman, spiritual intelligence, adaptive intelligence, affective computing and human-computer interaction, transformative learning, self-determination theory, and human-centered AI [8-10,15,16,19,20-22]. It also incorporates Moleka's, holistic conception of education and his subsequent work connecting

AI, human wellbeing, cognitive ecologies, spiritual intelligence, and regenerative forms of human development [23-28].

The central argument is that AI should not be conceptualized primarily as a competitor to human intelligence. Instead, AI can be understood as an environmental and technological condition within which new forms of human intelligence must develop. The objective of education in such an environment should not be to make human beings more computationally efficient than machines. It should be to cultivate the capacities through which human beings can interpret, evaluate, contextualize, ethically govern, relate to, and give meaning to increasingly powerful technological systems.

This theoretical article therefore develops a framework that connects AI-supported learning with meaning-centered learning, Human Generative Intelligence, and human flourishing. It formulates theoretical propositions concerning these relationships and identifies implications for educational psychology, pedagogy, AI ethics, and future empirical research.

THEORETICAL FRAMEWORK/HYPOTHESIS: FROM ARTIFICIAL INTELLIGENCE TO HUMAN GENERATIVE INTELLIGENCE

The concept of Human Generative Intelligence emerges from a fundamental distinction between computational generation and human generation of meaning. Contemporary AI systems can generate language, images, recommendations, explanations, and other forms of informational output. Their generative capacity represents an important development in artificial intelligence, but it should not be confused with the broader human capacity to interpret experience and create meaning.

Russell and Norvig, provide a foundational account of artificial intelligence as a field concerned with intelligent computational systems, while Floridi, situates digital technologies within a wider transformation of the human informational environment [11-12]. In this transformed environment, intelligence becomes distributed across human and technological systems. Malone, describes this emerging relationship through the concept of superminds, emphasizing the potential power created when people and computers think together [29].

The present framework builds on this insight while shifting the analytical emphasis. The central question is not simply how human and artificial intelligence can collaborate to produce more efficient outcomes. It is how such collaboration can contribute to the development of human beings capable of acting wisely, ethically, creatively, relationally, and purposefully.

HGI is therefore defined as the multidimensional human capacity to generate and transform knowledge, integrate diverse forms of intelligence, adapt to complexity, exercise ethical judgment, cultivate meaningful relationships, and construct purposeful responses to changing environments.

The word "generative" is central to this definition. Human beings do not merely process information. They interpret experiences, create narratives, imagine alternatives, develop values, construct identities, form relationships, and establish purposes. Human intelligence is consequently generative not only because humans can produce new information but because they can generate meaning and transform their relationships with the world.

This understanding is consistent with the holistic conception of education developed by Moleka, in which education concerns the development of the mind, body, and soul rather than cognitive achievement alone [23]. It is also consistent with Moleka's, conception of cognitive ecologies, which emphasizes that different environments can produce distinct forms of intelligence [26]. AI-rich digital environments therefore constitute new cognitive ecologies in which human intelligence must be reconsidered.

The Cognitive Dimension of Human Generative Intelligence

The cognitive dimension constitutes the foundational capacity to understand, evaluate, synthesize, and generate knowledge. AI technologies can significantly augment this dimension by providing access to information, alternative explanations, pattern recognition, and computational assistance [1,5].

However, cognitive augmentation does not eliminate the need for human cognition. On the contrary, the abundance of AI-generated information increases the need for critical evaluation. Bender, demonstrate that sophisticated language generation does not necessarily guarantee truth, understanding, or reliable knowledge [3]. Dwivedi, similarly identify opportunities and challenges associated with generative conversational AI [4].

The cognitive dimension of HGI therefore involves more than knowing how to obtain information from AI. It includes the capacity to interrogate information, recognize uncertainty, compare perspectives, identify assumptions, distinguish evidence from speculation, and transform information into contextualized understanding.

AI literacy becomes an important component of this dimension. Long and Magerko, and Ng, show that competent interaction with AI requires multiple forms of understanding [13-14]. HGI extends this insight by proposing that AI literacy should ultimately contribute to human intellectual agency rather than technological dependence.

The Emotional Dimension of Human Generative Intelligence

The emotional dimension of HGI concerns the capacity to recognize, understand, regulate, and constructively integrate emotions into learning and decision-making. Goleman, established the importance of emotional intelligence for human functioning, while Picard, demonstrated the significance of affect in computing and human-machine interaction [19,21].

The increasing emotional mediation of digital technologies creates new possibilities and risks. AI can simulate conversational responsiveness, detect certain affective signals, and provide forms of personalized interaction. However, the existence of affective computing does not imply that artificial systems possess human emotional experience. The educational objective should therefore remain the development of human emotional capability.

In Meaning-Centered AI Learning, AI may provide prompts, feedback, simulations, or reflective exercises that help learners identify emotional states and consider their consequences. Yet the learner remains the locus of emotional interpretation and development.

This distinction is particularly relevant to psychological applications. Fiske, demonstrate that AI applications in psychology and psychotherapy raise complex questions about trust, responsibility, human connection, and the limits of technological substitution [18]. The same principle applies to education: technological responsiveness should not be mistaken for human relational and emotional understanding.

The Relational Dimension of Human Generative Intelligence

Human intelligence develops within relationships. Learning is fundamentally social, dialogical, and culturally situated. Vygotsky, emphasized the role of social interaction in the development of higher psychological processes [30]. From this perspective, the individual learner cannot be understood independently of the social environment in which learning occurs.

AI introduces new forms of technologically mediated interaction into this social environment. Learners may increasingly interact with AI systems for explanation, feedback, brainstorming, tutoring, and conversational support. Such interaction can expand learning opportunities, but it can also create the risk of social displacement if technological interaction replaces meaningful human relationships.

The relational dimension of HGI therefore concerns the capacity to communicate, collaborate, empathize, negotiate meaning, and participate constructively in communities. AI should strengthen these capacities rather than undermine them.

Malone's, conception of superminds provides a useful foundation for understanding the potential of human-computer collaboration [29]. The HGI framework, however, emphasizes that productive collaboration depends upon human relational competence. The value of technological intelligence emerges partly through the quality of human relationships surrounding its use.

The Ethical Dimension of Human Generative Intelligence

The ethical dimension concerns the capacity to distinguish between what can be technologically accomplished and what ought to be done. This distinction becomes increasingly important as AI systems acquire greater decision-making and generative capabilities.

Floridi, argue for an ethical framework for a good AI society based on principles that connect technological innovation with human values and societal wellbeing [17]. Holmes, similarly emphasize the implications of AI for teaching and learning [6]. UNESCO, provides policy guidance emphasizing the need to place human considerations at the center of AI development in education [31].

The HGI framework incorporates these concerns by conceptualizing ethical intelligence as a core human capability rather than merely a regulatory requirement. Learners need to develop the capacity to recognize bias, question automated decisions, evaluate consequences, protect human dignity, and assume responsibility for decisions made with technological assistance.

This is particularly important because AI can create an illusion of objectivity. A technologically generated answer may appear authoritative even when it is incomplete, biased, or inaccurate. Ethical intelligence enables learners to resist such uncritical acceptance.

The Existential and Spiritual Dimension of Human Generative Intelligence

The existential-spiritual dimension constitutes one of the most distinctive components of HGI. Human beings do not merely ask what they know or how they can achieve a goal. They also ask why something matters, what constitutes a meaningful life, what values should guide action, and how individual existence relates to larger communities and purposes.

Zohar and Marshall, conceptualize spiritual intelligence as a capacity associated with meaning, values, and the integration of human experience [20]. King and DeCicco, similarly develop a model of spiritual intelligence that emphasizes the capacity to derive meaning, engage in existential reflection, and integrate experiences into broader frameworks of understanding [19].

The present framework does not reduce spiritual intelligence to a particular religious tradition. Instead, it treats the existential-spiritual dimension as a broad human capacity to engage questions of meaning, purpose, values, transcendence, identity, and ultimate significance. This dimension is compatible with secular, philosophical, cultural, and religious forms of meaning-making.

This perspective becomes increasingly important in AI-rich environments because technological systems can generate answers without necessarily possessing a human sense of purpose. AI can tell learners what information is available, but the human learner must still determine why that knowledge matters and how it should shape action.

Moleka's, holistic educational perspective and his subsequent work on spiritual intelligence as a dynamic capability provide a further theoretical basis for understanding this dimension as developmental rather than merely contemplative [23,28]. Spiritual intelligence can influence how individuals interpret complexity, exercise leadership, make ethical decisions, and orient organizational and social transformation.

HGI as an Integrated System

The five dimensions of HGI should not be treated as independent abilities. They form an integrated system.

Cognitive intelligence without ethical intelligence may produce highly competent but irresponsible action. Emotional intelligence without cognitive reflection may limit critical evaluation. Relational intelligence without ethical awareness may reproduce harmful social dynamics. Ethical intelligence without existential reflection may become procedural rather than deeply value-oriented. Existential intelligence without

cognitive and relational capacities may remain abstract rather than transformative.

HGI therefore describes the integration of these dimensions into a coherent human capacity.

This integrated conception also corresponds with the broader understanding of intelligence developed through Gardner, Goleman, Sternberg, King and DeCicco, and Zohar and Marshall [8-10,19-20]. The distinctive contribution of HGI is to bring these dimensions into the specific context of AI-mediated learning.

Meaning-Centered AI Learning

Meaning-Centered AI Learning represents the pedagogical environment through which HGI can develop. It is defined as an AI-supported educational approach that intentionally integrates technological augmentation with reflection, human agency, ethical reasoning, emotional development, relational learning, and purpose-oriented meaning-making.

The concept responds to a limitation in technologically centered approaches to AI in education. Adaptive systems and intelligent tutoring can personalize learning, but personalization alone does not guarantee meaning. Automated feedback can improve performance, but performance alone does not constitute flourishing.

Meaning-centered learning therefore changes the criterion of success. A successful AI-supported learning environment should not merely enable learners to complete tasks more quickly. It should help learners become more capable of thinking critically, understanding themselves, relating to others, acting responsibly, and identifying meaningful purposes.

Human Agency as the Central Moderating Condition

Human agency represents a critical condition in the proposed model. Ryan and Deci, demonstrate the importance of autonomy for human motivation and development [15]. Shneiderman, similarly emphasizes human-centered approaches to AI in which technological systems are designed to support human goals rather than displace human control [16].

The framework therefore proposes that AI's contribution to HGI is not automatic. AI can either amplify or diminish human agency depending on its pedagogical design and patterns of use.

When learners use AI to explore alternative perspectives, test ideas, receive feedback, and deepen inquiry, AI may function as an amplifier of human intelligence. When learners rely on AI to think, decide, interpret, and create without critical engagement, AI may become a mechanism of cognitive outsourcing.

The developmental outcome therefore depends partly on whether AI remains a tool within human-directed learning or becomes a substitute for human intellectual and ethical agency.

Human Flourishing as the Ultimate Developmental Outcome

The ultimate outcome proposed by the framework is human flourishing. Seligman, conceptualizes flourishing as a multidimensional form of wellbeing that extends beyond the absence of distress or the achievement of isolated goals [32]. The present framework extends this orientation into AI-mediated learning environments.

Human flourishing within the HGI model involves the capacity to develop intellectually, emotionally, relationally, ethically, and existentially while maintaining meaningful agency within complex technological environments.

Moleka's, work connecting AI, innovationology, human wellbeing, and ecosystem stewardship further supports the idea that technological intelligence should be evaluated through its contribution to broader forms of human and systemic wellbeing [24]. His work on indigenous ecological knowledge and resilient governance, circular bioeconomy and regenerative resource systems, and cognitive ecologies reinforces the broader argument that intelligence must be understood within ecological, cultural, and systemic contexts [25-27].

HGI consequently places human flourishing at the endpoint of a developmental pathway rather than treating technological performance as the final objective.

Theoretical Propositions

The theoretical model proposes that AI-supported learning environments can contribute to the development of Human Generative Intelligence when they are intentionally designed to strengthen human agency, reflection, creativity, ethical reasoning, relational engagement, and meaning-making.

Proposition 1

AI-supported learning environments characterized by active learner participation, critical reflection, and human agency will be positively associated with Human Generative Intelligence.

Proposition 2

Meaning-Centered AI Learning will mediate the relationship between AI-supported learning and Human Generative Intelligence, such that AI will contribute more strongly to HGI when technological interaction is embedded within reflective, ethical, relational, and purpose-oriented educational practices.

Proposition 3

Human Generative Intelligence will be positively associated with human flourishing because the integration of cognitive, emotional, relational, ethical, and existential-spiritual capabilities strengthens individuals' capacity to navigate complexity and construct meaningful lives.

Proposition 4

Human agency will moderate the relationship between AI-supported learning and Human Generative Intelligence. The relationship will be stronger when AI augments learner autonomy and weaker when AI encourages passive dependence and cognitive outsourcing.

Proposition 5

The five dimensions of HGI will interact synergistically, such that their integrated development will provide a stronger

theoretical explanation of human flourishing than any individual dimension considered independently.

The resulting conceptual pathway can therefore be expressed as:

AI-Supported Learning → Meaning-Centered AI Learning → Human Generative Intelligence → Human Flourishing

with human agency, ethical orientation, pedagogical design, and relational context functioning as critical contextual conditions.

Supporting Evidence

Evidence from Artificial Intelligence in Education

The existing literature on AI in education provides strong evidence that AI is transforming educational environments. Luckin identify substantial opportunities for AI to personalize and enhance learning, while Chen, review applications of artificial intelligence across educational contexts. Zawacki-Richter, demonstrate the growing use of AI in higher education, including profiling, prediction, assessment, adaptive systems, and intelligent tutoring [1,2,5].

Ouyang and Jiao, contribute an important conceptual perspective by distinguishing different paradigms of AI in education [7]. Their analysis demonstrates that AI can be conceptualized not simply as an automated tool but as part of changing relationships between learners, educators, and technological systems.

These findings support the first component of the proposed framework: AI is not an external technology added to an otherwise unchanged educational environment. It is increasingly becoming part of the learning ecology itself.

However, the existing literature also reveals a conceptual gap. Much of the research evaluates AI through learning outcomes, efficiency, adoption, personalization, or technological functionality. These measures remain valuable but do not fully capture the developmental consequences of AI-mediated education. HGI addresses this gap by introducing human developmental capacities as a central outcome.

Evidence from AI Literacy Research

The growth of AI literacy research provides further support. Long and Magerko, demonstrate that AI literacy includes a broad range of competencies, while Ng, conceptualize AI literacy as a multidimensional construct [13-14].

These perspectives support the cognitive component of HGI because learners require the ability to understand AI systems and evaluate their outputs. Yet HGI goes beyond AI literacy by asking what learners do with this understanding.

A learner may understand how a generative AI system works while still accepting its outputs uncritically. Conversely, a learner with strong HGI would use AI literacy as a basis for critical inquiry, ethical evaluation, contextual interpretation, and purposeful action. AI literacy is therefore conceptualized within HGI as an enabling competence rather than the ultimate developmental objective.

Evidence from Cognitive and Multiple Intelligence Theories

Gardner's, theory of multiple intelligences provides conceptual support for understanding intelligence as multidimensional [8]. The theory challenges approaches that equate intelligence with a narrow set of standardized cognitive capacities.

Sternberg's, theory of adaptive intelligence is particularly relevant to AI-rich environments because it emphasizes adaptation to changing contexts [10]. The rapid development of AI represents precisely such a changing context. Human beings must learn not simply to perform cognitive tasks but to adapt intelligently to environments in which cognitive work is increasingly distributed between humans and machines.

The HGI framework extends these perspectives by integrating adaptive and multidimensional intelligence with emotional, relational, ethical, and existential capacities.

Evidence from Emotional and Affective Intelligence

Goleman's, theory of emotional intelligence supports the proposition that human capability cannot be adequately understood through cognition alone [9]. Picard's, work on affective computing further demonstrates that emotional dimensions are increasingly relevant to interactions between humans and technology [21].

Together, these perspectives support the inclusion of emotional intelligence within HGI. However, the framework makes an important distinction: the ability of a technological system to recognize or simulate emotional signals does not eliminate the need for human emotional development.

Meaning-centered AI learning should therefore use AI to support emotional reflection and learning without assuming that technological simulation can replace human emotional experience and relationships.

Evidence from Transformative Learning

Mezirow's, theory of transformative learning provides direct support for the reflective dimension of the proposed framework [22]. Transformative learning involves changes in meaning perspectives through critical reflection and the reconsideration of previously held assumptions.

AI can potentially support such processes by exposing learners to alternative perspectives, facilitating comparative inquiry, generating counterarguments, and enabling dialogue across knowledge domains. Yet the transformative process remains dependent upon human reflection.

This distinction is crucial. AI can generate alternative perspectives, but it cannot determine whether a learner should revise a deeply held assumption. The learner must engage in critical reflection and decide whether transformation is warranted.

Meaning-centered AI learning therefore treats AI as a catalyst for transformative learning rather than as an autonomous agent of transformation.

Evidence from Self-Determination Theory

Ryan and Deci, provide theoretical support for the centrality of autonomy, competence, and relatedness in human development [15]. These psychological needs are directly relevant to AI-mediated learning.

AI systems can support competence by providing feedback and adaptive assistance. They may also support learning access and potentially facilitate certain forms of relatedness. However, if AI systems become overly directive or replace learner decision-making, they may weaken autonomy.

The HGI framework therefore proposes that the relationship between AI and human development is conditional upon the preservation of human agency. Technological assistance should expand the learner's capacity to act rather than diminish it.

Evidence from Sociocultural Learning

Vygotsky's, account of learning emphasizes the importance of social interaction and cultural mediation in psychological development [30]. This perspective challenges purely individualistic models of learning and suggests that intelligence develops through interaction with social and symbolic environments.

AI constitutes a new form of mediating environment. It can provide explanations, prompts, feedback, and symbolic resources, but it does not eliminate the importance of human teachers, peers, families, communities, and cultural contexts.

The relational dimension of HGI is therefore supported by a sociocultural understanding of intelligence. Meaning-centered AI learning should integrate AI within social learning rather than allowing technology to become the primary relational environment.

Evidence from Spiritual and Existential Intelligence

The spiritual dimension of the framework is supported by King and DeCicco (2009) and Zohar and Marshall, who conceptualize spiritual intelligence in terms of meaning, existential reflection, values, and the capacity to integrate experience [19-20].

The relevance of these perspectives becomes more visible in technologically saturated environments. AI can generate increasingly sophisticated answers, but the human capacity to determine purpose remains essential.

Moleka, conceptualizes spiritual intelligence as a dynamic capability capable of contributing to organizational transformation [28]. This perspective supports the integration of spiritual intelligence into HGI as an active developmental capacity rather than a purely contemplative or private phenomenon.

Moleka's, holistic conception of education similarly provides a basis for understanding education as involving the whole person [24]. Within this perspective, technological learning should contribute to the development of mind, body, soul, relationships, and purpose rather than reducing education to information acquisition.

Evidence from AI Ethics and Human-Centered AI

Ethical frameworks for AI provide substantial support for the ethical dimension of HGI. Floridi, emphasize the importance of human-centered ethical principles in AI development [17]. UNESCO, similarly emphasizes policy approaches that protect human values and educational purposes [31]. Shneiderman, argues for human-centered AI that keeps human goals and control at the center of technological design [16].

These approaches converge on a central principle: technological capability must remain connected to human values.

HGI translates this principle into a psychological and educational construct. Ethical intelligence becomes a human capacity that learners must develop if they are to function responsibly in AI-mediated environments.

Evidence from Psychological and Therapeutic AI

Fiske, provide an important perspective on AI within psychology, psychiatry, and psychotherapy [18]. Their analysis illustrates how technological systems can challenge conventional understandings of trust, human interaction, responsibility, and professional relationships.

Although education differs from psychotherapy, the underlying issue is similar. AI-mediated interaction can simulate forms of responsiveness without reproducing the full complexity of human relational experience. This reinforces the importance of preserving human relational intelligence in digitally mediated environments.

The implication for HGI is that AI should augment human interaction rather than normalize the replacement of meaningful human relationships with technological simulation.

Evidence from Human-Technology Collaboration

Malone's, concept of superminds demonstrates the potential of human-computer collaboration [29]. Rather than viewing intelligence as exclusively located in either humans or machines, superminds emphasize the collective intelligence that emerges from interaction.

The HGI framework adopts this relational view but adds a developmental criterion. The question is not simply whether humans and computers can collectively produce better outputs. The question is whether such collaboration contributes to human development.

This distinction is important because an efficient human-machine system could theoretically produce excellent outputs while simultaneously weakening human autonomy, critical thinking, or relational capacity. HGI therefore places human flourishing alongside technological performance as a central criterion of success.

Evidence from Human Flourishing and Wellbeing

Seligman's, positive psychology provides a foundational framework for understanding flourishing as a multidimensional conception of human wellbeing [3]. This perspective supports the proposition that education should contribute to human development beyond academic achievement.

Moleka's, work further connects AI, innovationology, human wellbeing, and ecosystem stewardship, suggesting that technological and innovative capabilities should be evaluated within broader systems of wellbeing [24]. His work on indigenous ecological knowledge and climate-resilient resource governance and circular bioeconomy and regenerative resource systems reinforces a systems-oriented understanding of

intelligence in which human wellbeing is connected to social and ecological conditions [25,27].

Moleka's, work on cognitive ecologies provides an additional foundation for the present framework because it conceptualizes intelligence as shaped by environments [26]. AI-rich learning environments can therefore be understood as emerging cognitive ecologies that influence how individuals think, learn, relate, and make meaning.

Taken together, this body of literature provides converging theoretical support for HGI. AI-in-education research explains technological transformation; AI literacy explains technological competence; multiple and adaptive intelligence theories explain multidimensional human capability; emotional intelligence explains affective development; transformative learning explains reflective transformation; self-determination theory explains agency; sociocultural theory explains relational development; spiritual intelligence explains meaning and purpose; AI ethics explains responsibility; and positive psychology explains flourishing.

The HGI framework integrates these perspectives into a unified theoretical architecture.

DISCUSSION

The proposed Human Generative Intelligence framework responds to a fundamental transformation in the relationship between human beings and knowledge. The growing capabilities of AI challenge the assumption that education should primarily prepare individuals to perform cognitive tasks that increasingly sophisticated machines can also perform. This does not make human cognition obsolete. Instead, it creates an opportunity to reconsider cognition as one dimension within a broader architecture of human intelligence.

The theoretical significance of HGI lies in its attempt to shift the unit of analysis from machine capability to human developmental capability. Much of the contemporary debate asks what AI can do for teachers, students, researchers, or institutions. The present framework asks a complementary question: what should human beings become capable of doing, thinking, feeling, relating, and valuing when AI becomes a normal component of the learning environment?

This shift has important implications for educational psychology. Traditional educational outcomes often focus on achievement, competence, retention, or measurable cognitive performance. These outcomes remain relevant, but they may become insufficient in AI-rich environments. If AI can provide explanations, draft essays, summarize literature, solve equations, translate languages, and generate ideas, then education must increasingly emphasize the human capacities required to judge, contextualize, challenge, and meaningfully apply these outputs.

The HGI framework consequently reframes the purpose of AI-supported learning. AI should not be considered successful merely because it allows learners to complete academic tasks more efficiently. It should be considered successful when it contributes to deeper learning and broader human development.

This proposition extends the existing literature on AI in education. Luckin, Chen, Zawacki-Richter, and Ouyang and Jiao, establish the importance of AI for educational transformation [1,2,5,7]. The HGI framework extends this discussion by adding an explicit developmental architecture. It asks whether AI-supported education produces not only better educational outcomes but also more reflective, ethical, relational, emotionally capable, and purposeful human beings.

The framework also contributes to discussions of AI literacy. Long and Magerko and Ng, correctly emphasize the need for learners to understand AI. Yet understanding AI is only one part of responsible participation in AI-mediated environments [13-14]. A person may understand an algorithm while still lacking the ethical judgment to determine whether its use is appropriate. HGI therefore positions AI literacy within a broader human capability framework.

The relationship with transformative learning is equally significant. Mezirow emphasizes critical reflection and transformation of meaning perspectives [22]. AI can create new opportunities for such transformation because it can expose learners to alternative explanations, perspectives, arguments, and conceptual frameworks. Yet AI cannot substitute for the human act of reflection. The learner must still decide how to interpret competing perspectives and whether existing assumptions should be revised.

This distinction prevents the framework from becoming technologically deterministic. AI does not automatically produce better thinking. Its educational consequences depend upon the quality of human engagement with the technology.

The relationship with self-determination theory further strengthens this argument. Ryan and Deci (2020) demonstrate the importance of autonomy for healthy motivation and development. If learners become dependent upon AI for intellectual decisions, their sense of autonomy may decline. Conversely, if AI provides scaffolding that enables learners to explore questions, test ideas, and develop competence, it may support autonomy and competence.

The framework therefore treats agency as a central moderating condition. This position is consistent with human-centered AI approaches, which emphasize that technology should remain aligned with human purposes and control [8].

The ethical dimension of HGI has particular significance in this context. Floridi et al. (2018), UNESCO, Holmes, and Bender, demonstrate that AI development creates questions concerning responsibility, bias, human values, and social consequences. The HGI framework interprets these challenges as educational challenges as well as technological ones [3,6,31].

An ethical AI society cannot be created solely through technical safeguards. It also requires human beings capable of recognizing ethical problems and assuming responsibility for their decisions. Ethical intelligence must therefore become part of education itself.

The spiritual and existential dimension represents a further theoretical contribution. Contemporary discussions of AI frequently focus on cognition, ethics, productivity, and safety.

Less attention is given to the question of meaning. Yet technological progress does not automatically provide purpose.

The inclusion of spiritual intelligence responds to this gap. King and DeCicco (2009) and Zohar and Marshall, demonstrate the relevance of meaning and existential reflection to human intelligence [20]. Moleka's, work further develops a holistic conception of education and spiritual intelligence as a dynamic capability [23,28]. The present framework incorporates these perspectives into AI-mediated learning without reducing spirituality to a particular religious system.

The existential dimension is especially important because AI can increasingly provide answers to informational questions while remaining incapable of determining the ultimate significance of those answers for a human life. The learner must still ask what knowledge means, what values should guide its use, and what purposes should shape action.

This distinction suggests that the future of education may involve a paradox. As machines become increasingly capable of answering questions, human education may need to become increasingly focused on asking better questions.

The relational dimension similarly protects against an overly individualistic or technologically deterministic model of learning. Vygotsky, reminds us that cognitive development occurs through social and cultural mediation [30]. AI can become a powerful mediating resource, but it should not become the only mediator. Teachers, peers, families, communities, and cultural traditions remain central to human development.

The HGI framework therefore does not envision a future in which learners interact primarily with machines. Instead, it envisions an expanded learning ecology in which AI participates in human networks of dialogue, collaboration, reflection, and meaning.

This position is also compatible with Malone's, concept of superminds. The future may not involve humans versus machines but humans and machines working together [29]. The crucial question is what kind of human beings participate in these systems. HGI proposes that the answer must involve people who are cognitively capable, emotionally mature, relationally competent, ethically responsible, and capable of meaning-making.

The framework also contributes to a broader ecological conception of intelligence. Moleka's, work on cognitive ecologies suggests that intelligence is shaped by environments [26]. AI-rich educational environments therefore do not merely provide new tools; they may reshape the conditions under which intelligence develops.

This creates an important research agenda. Future studies should investigate whether different patterns of AI use produce different developmental outcomes. AI use characterized by passive outsourcing may have different consequences from AI use characterized by inquiry, reflection, dialogue, and creativity. The distinction between these forms of use may become more important than the simple question of whether AI is present.

The framework nevertheless has limitations. HGI remains a theoretical construct and requires empirical validation. Its five dimensions may overlap with existing constructs such as emotional intelligence, spiritual intelligence, social intelligence, adaptive intelligence, and metacognition. Future research will therefore need to establish whether HGI provides explanatory value beyond existing constructs or whether its principal contribution lies in integrating them within a new AI-mediated context.

Measurement also presents a challenge. Cognitive capabilities can often be assessed through established instruments, whereas existential meaning, ethical judgment, relational competence, and flourishing are more complex to operationalize. Mixed-method research may therefore be particularly appropriate for investigating HGI.

Cross-cultural research will be essential. Conceptions of intelligence, personhood, spirituality, flourishing, and meaning vary across societies. A universal framework should therefore avoid assuming that the dimensions of HGI have identical expressions across cultural environments. The framework may be universal at the level of broad human capacities while remaining culturally pluralistic in their interpretation and expression.

This consideration is particularly important for African educational contexts. The holistic and relational dimensions of Moleka's work suggest that models of human intelligence should not be developed exclusively from Western individualistic assumptions. Cognitive, relational, spiritual, ecological, and communal dimensions of human development may be particularly important in contexts where personhood is strongly embedded within relationships and community.

The HGI framework should therefore be understood as an open theoretical architecture rather than a closed psychological taxonomy. Its purpose is to provide a conceptual foundation for investigating how human intelligence can evolve in partnership with artificial intelligence while preserving human agency and flourishing.

RECOMMENDATIONS

The theoretical framework developed in this article has implications for educational institutions, teachers, educational psychologists, AI designers, policymakers, and researchers.

Educational institutions should reconsider their AI strategies in terms of human development rather than technological adoption alone. Institutional AI policies should evaluate not only whether technologies improve efficiency or academic performance but also whether they preserve learner autonomy, strengthen critical thinking, encourage ethical reasoning, support meaningful relationships, and contribute to wellbeing.

Teacher education should also evolve. Teachers operating in AI-rich environments will increasingly function less as exclusive providers of information and more as facilitators of inquiry, reflection, dialogue, ethical reasoning, creativity, and meaning-making. Professional development should therefore combine AI literacy with psychological, ethical, relational, and pedagogical competencies.

AI literacy should be embedded within a broader human-centered educational model. Learners should understand how

AI systems work, what their limitations are, how bias can emerge, and how generated information should be evaluated. However, they should also be taught to maintain intellectual ownership of their learning and to use AI as a resource for inquiry rather than as a replacement for thinking.

Educational environments should deliberately protect opportunities for human interaction. The expansion of AI should not result in the systematic substitution of teachers, peers, mentors, or communities with technological agents. Human relationships remain essential to emotional, social, cultural, and psychological development.

Meaning and purpose should become explicit dimensions of AI-mediated learning. Educational activities should invite learners to connect knowledge with personal values, social responsibilities, community needs, and broader questions of purpose. Such practices would provide an educational foundation for the existential dimension of HGI.

Ethical reasoning should become integral to AI education. Students should regularly confront questions concerning responsibility, fairness, privacy, bias, accountability, human dignity, and the consequences of technological decisions. This would transform AI ethics from an abstract policy topic into a developmental component of human intelligence.

Educational institutions should also develop mechanisms for monitoring the psychological consequences of intensive AI use. The objective should not be to prohibit AI but to identify patterns of use that promote dependence, disengagement, isolation, or diminished agency and distinguish them from patterns that promote creativity, competence, reflection, and collaboration.

For policymakers, the framework suggests that AI policy in education should include human flourishing as a central criterion. UNESCO's, emphasis on human-centered policy provides an important foundation for such an approach [31]. Educational AI governance should therefore consider not only safety and privacy but also autonomy, wellbeing, equity, relational development, and human dignity.

For AI developers, the framework suggests that educational technologies should be designed to support human generativity. Systems could be designed to ask reflective questions, present competing interpretations, encourage source evaluation, expose uncertainty, facilitate collaboration, and prompt ethical consideration rather than simply generating final answers.

For researchers, the most immediate priority is empirical validation of HGI. Research should examine whether the five proposed dimensions can be measured reliably and whether their integration predicts outcomes such as flourishing, resilience, creativity, ethical decision-making, meaningful engagement, and adaptive capacity.

Longitudinal research would be particularly valuable because the effects of AI on human development may not become visible through short-term achievement measures. Experimental research could compare different AI pedagogies, while qualitative research could examine how learners experience agency, meaning, identity, and relationships in AI-mediated environments.

Cross-cultural research should also investigate whether HGI takes different forms across educational and cultural contexts. Such research could contribute to a more pluralistic psychology of intelligence that recognizes the diversity of human conceptions of flourishing and meaning.

CONCLUSION

Artificial intelligence is transforming the technological conditions of learning, but its most profound consequence may concern the way humanity understands intelligence itself. As AI systems become increasingly capable of processing information, generating content, and performing complex cognitive tasks, the educational challenge is no longer simply to make learners more efficient at performing such tasks. The deeper challenge is to cultivate human capacities that give knowledge direction, purpose, ethical significance, emotional depth, relational meaning, and existential orientation.

This article has proposed Human Generative Intelligence as a theoretical framework for addressing that challenge. HGI conceptualizes human intelligence as an integrated capacity encompassing cognitive, emotional, relational, ethical, and existential-spiritual dimensions. It further proposes Meaning-Centered AI Learning as the educational environment through which these capacities can be intentionally cultivated in AI-rich contexts.

The framework builds upon and integrates insights from artificial intelligence in education, AI literacy, multiple intelligences, emotional intelligence, adaptive intelligence, transformative learning, self-determination theory, sociocultural learning, spiritual intelligence, positive psychology, AI ethics, and human-centered AI. It also draws on Moleka's work on holistic education, cognitive ecologies, AI and human wellbeing, regenerative systems, indigenous knowledge, and spiritual intelligence as a dynamic capability [23-28].

The central theoretical proposition is that AI does not automatically make humans more intelligent. Its developmental value depends on how technological intelligence is integrated with human agency and human developmental capacities. AI can augment cognition, but human beings must determine how knowledge is interpreted. AI can generate responses, but humans must determine what those responses mean. AI can support decisions, but humans remain responsible for ethical judgment. AI can simulate interaction, but meaningful relationships remain fundamentally human. AI can provide information, but human beings must determine purpose.

The future of education should therefore not be framed as a competition between artificial and human intelligence. A more productive perspective is to understand AI as part of an emerging human-technological ecology in which the development of human intelligence becomes increasingly important.

Human Generative Intelligence provides one theoretical pathway for understanding this transformation. Its ultimate objective is not to make human beings compete with machines on the machines' terms. It is to cultivate human beings who can

use increasingly powerful technologies while remaining capable of reflection, creativity, empathy, ethical responsibility, meaningful relationships, adaptive intelligence, and purpose.

In this sense, the central question for the future of AI in education is not merely what artificial intelligence can do. It is what kind of human intelligence humanity chooses to cultivate in an age of artificial intelligence.

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